THE WESTWARD MOVEMENT OF THE ART OF PRINTING

TURKESTAN, PERSIA, AND EGYPT AS MILESTONES IN THE LONG MIGRATION FROM CHINA TO EUROPE

By THOMAS F. CARTER

While modern science with its electricity and its steam is fast bringing the Far East and the West together in one cultural unity, modern archæology is revealing the fact that this cultural unity is not altogether new. Over the Great Silk Ways that bound China to the Roman Orient, and later to the Caliphate, cultural streams were flowing in both directions long before the peoples at either end of the line knew very much of the existence of those at the other. Recent excavations in Turkestan, together with improved facilities for the study of Chinese sources, are gradually making it possible to trace certain of these currents across the length of Asia. Perhaps soon we shall be able to evaluate something of the debt that Europe owes to Chinese inventiveness, and also that which China has owed to these early contacts with the West. Such study as has been done would seem to indicate that peaches, apricots, silk, paper, playing cards, gunpowder, the compass and porcelain, as well as printing, are among China's early gifts to the West, while grapes and carrots, Mohammedanism and Nestorian Christianity, and certain impulses from Greek art are some of the things that China received in return. Spinach and chess apparently started in the region of India and moved in both directions.

No invention has been studied in its early history with such minuteness, or has been the occasion of so many learned books, as the invention of printing. But such study has, strange to say, been confined to the invention of printing in Europe. Its Asiatic antecedents, though usually admitted, have been ignored. Among several thousand titles on the history of printing in the great library at Berlin, for instance, there is just one title that refers to China—an article in a learned magazine that appeared in Paris in 1848. The study of this unexplored field is rendered fascinating by the discoveries of recent archæological research.

The word printing is used in this paper in its broad sense. The form of printing that has always held sway in the Far East is not typography, but an art known as xylography, or block printing, the making of a whole page from one block. Xylography was the usual form of printing in China, and xylography in almost exactly the same form spread through Central Europe during the half century or more before Gutenberg, so that it became the foundation on which Gutenberg's invention was based. Though China had discovered the use of movable type in the 11th century, and though some wooden type, dating from about 1300, was found by M. Pelliot at Tun Huang, the non-alphabetic character of the Chinese script made block printing more practical and usual than typography, and there is no clear evidence that the use of movable type in Europe was connected with the Chinese invention except through common ancestry, through a common origin in block

printing. It is block printing therefore whose path from China toward Europe we shall attempt roughly to trace.

Block printing in China goes back at least as far as the 8th century of our era. Some very crude examples of the art—Buddhist charms in the Sanskrit language and Chinese character—were printed by the Empress Shotoku of Japan in order to save her soul in the year 770, and several of them are now in the British Museum. The oldest printed book is also in the British Museum. It is a Buddhist classic found by Sir Aurel Stein in the Cave of the Thousand Buddhas, and bears the date 868. But it was not till after the Confucian classics had been printed by imperial order in the middle of the 10th century that printing came to be general in China. The next centuries, the period that is naturally associated in our minds with the Norman Conquest and Magna Charta, was the time when printing in China was at its best, when all of China's great literature was printed. It was a time, too, when China was financially largely on a paper money basis, and when sometimes the printers of paper money were almost as busy as they have been in Germany during the past years.

There is every indication that it was in the western part of China that printing began, and that it started to spread westward about as soon as it became general through China. The famous library or manuscript chamber, sealed up and forgotten some nine hundred years ago, and found by Stein in 1907, contained not only the world's oldest printed book mentioned above, but a number of other prints as well, dating in the main from the 10th century. This ancient library was at Tun Huang, in a little spur of China that extends far out into the Turkestan desert.

BLOCK PRINTING IN THE OASIS OF TURFAN

If we consider Tun Huang as a part of China rather than a stage on the westward journey, the most important finds along the route from China to Europe are those of Grünwedel and Le Coq in and about the Oasis of Turfan. Though Turfan is in Chinese Turkestan and only a few hundred miles from the Chinese city of Tun Huang, it has from the earliest times had a racial and cultural development so entirely different from that of China that it is necessary to pause and see what sort of a place Turfan was and what was the significance of this cosmopolitan centre in the westward march of the art of printing.

The Oasis of Turfan is a strange depression in the earth's surface, almost as deep as the Dead Sea, and surrounded on all sides except the east by high mountains. The modern name of the immense territory in which the oasis is situated, Chinese Turkestan, indicates two of the many peoples whose cultures blended in this ancient region. But they were not all. The earliest inhabitants of the oasis within historic times were a people related in race and language to ourselves. In the early years of the Christian era this Indo-European folk were converted to Buddhism, but Manichean and Christian missionaries who came later into the country claimed also a goodly number of followers, and the three religions seem to have lived side by side in the oasis with a good deal of harmony. In the 7th century Turfan was

conquered by China, but though the oasis remained for several hundred years a loosely controlled outpost of the Chinese Empire, this connection did not interfere with the development of a very unique type of eclectic culture. More important was the conquest of the country in the 9th century by a Turkish tribe called the Uigurs, for these Uigurs made the town of Idiqut, near Turfan, their capital, and made the old Indo-European civilization that they found very thoroughly their own.

From the time of its conquest by the Uigur Turks, Turfan, located as it was in the very centre of Asia, may be said to have been the focal point where the culture streams of Asia met; open on the south and west to the religious influences of India, Persia, and Syria; on the east to the political hegemony of China; and on the north forming the cultural centre of a loose empire that stretched far away over nomad tribes of Mongolia and Siberia. Uigur civilization came to its height in the 9th and 10th centuries of our era, but Turfan remained an important centre until after its conquest under Jinghis Khan.

It is the mingling of races and religions that gives to the Turfan discoveries their peculiar fascination and their importance. Chinese and swarthy Indians, Turks, and blue-eyed, fair-haired mountaineers of a stock that seems wonderfully European, all stand out clearly in their wall frescoes, while the character of the art itself is a blending of that of China and that of India with various Western art impulses from Persia and Greece. Nor is there less mingling in the domain of religion. Side by side stood Christian churches and Buddhist temples, while in these Buddhist temples Manicheans, the representatives of St. Augustine's early religion, seem also to have worshipped. Manicheism was the religion of the royal house, Buddhism that of the majority of the people, Nestorian Christianity that of the minority; the Confucian culture of the Chinese overlords made little impression.

Needless to say, Turfan was a polyglot community. Seventeen different languages are represented among the documents found by the Prussian expedition. Some of these appear in as many as four or five different alphabets. There seems to have been a mania for fitting new alphabets to languages to see which was best suited.

In this melting pot of race, language and religion with its high valuation of literature and art, block printing early found itself at home. Block-printed Buddhist texts and wood-cuts, sometimes in great quantity, were found in each of the many sites excavated. Most of these block prints are in small fragments, as they have had to be rescued from crumpled and torn deposits in the ruined monasteries, whose libraries seem wantonly to have been cut to pieces by some persecuting hand. One notable exception, however, is the monastery at Murtuk, in which a large portion of the best preserved block prints were found.

The block prints from the region of Turfan, though all are undated and though a few seem to bear evidence of an earlier date, seem to belong in the main to the early Mongol period and the period just before the beginning of Mongol domination—in other words, to the 13th and early 14th centuries, the period just before block printing appeared in Europe. Printing seems to have reached a climax at this time

and then to have come to an end, as the whole culture of the Turfan basin ceased with the drain of its man power brought about through the Mongol campaigns.

Six languages are used in the Turfan block prints. The larger number are in Chinese, Sanskrit, and Uigur-Turkish, while a few are in Tangut, Tibetan, and Mongol.

The Uigur books and fragments are in the Sogdian alphabet, an alphabet brought from Syria about the time of our era, and later taken over by the Uigurs when they conquered the land. The language is pure Turkish, which, though not the direct ancestor of modern Ottoman, presents a striking likeness to it. As the books are all translations of Buddhist sutras, they contain many transliterations of Sanskrit names and words. Where this occurs, the Sanskrit original is printed in between the lines, much as English words are introduced in a modern Japanese text. The page numbers in Uigur printed books are as a rule in Chinese, as is also the title of the book, which appears every few pages at the side of the page. These Buddhist printed books in a Turkish language, with Sanskrit notes and Chinese page numbers in a script brought from Syria, are in themselves an epitome of the eclectic character of the Uigur civilization and of the international aspect that the art of printing has always borne.

The books of Turfan offer an interesting study in the competition that was going on between different book forms : the roll which was the earlier form both in China and in the West; the folded book, like an American railway time-table, which under the influence of printing had gradually displaced the roll in China ; the stitched book with pages which had earlier displaced the roll in Syria and Egypt ; and the Indian form called *pothi,* which consisted of long strips of bark or paper held together by a thong between two boards. All these forms are represented in the Turfan block books except the stitched book with pages. This omission is interesting, as Christian stitched books had circulated at Turfan for some time before block printing came into use. The stitched book reached China about the 11th century, and most of the early printed books from China are in this more modern form. Somehow the Buddhist has never taken kindly to this form of book. In Turfan it was used in the main by Christians; in China it was the mark of Confucian and secular literature, and as such came to be the usual form as in the West. The Buddhist printers always preferred the folded book, or sometimes in Central Asia the Indian *pothi,* or else some intermediate form.

The great significance of the printing of the Uigur-Turks lies in the fact that the Uigur civilization lay at the basis of such culture as the new Mongol Empire possessed. The incorporation of the Uigur realm was one of the first achievements of Jinghis. From that time not only did the Uigurs form a large part of the Mongol army, they were also the Mongol brains. It was Uigurs who reduced the Mongol language to writing and applied to it their own alphabet. It was Uigurs who did such writing as was needed at the Mongol court. As Turfan, drained of its man power for the Mongol armies, dwindled in importance, its culture was transferred bodily to Karakorum and became the basis of the culture of the rising Mongol

power, till it was gradually displaced at the eastern end of the empire by the higher civilization of China, and at the western end by that of Islam. During the lightning campaigns of the Mongols in Western Asia, it was the culture of the Uigur-Turks that followed the Mongol armies, and the Uigur-Turks were a people that knew well how to print.

BLOCK PRINTING IN PERSIA

The Mongol armies overran Persia several times during the middle of the 13th century. In 1258 Bagdad was taken, and the caliphate, for the time being, destroyed. A large part of the Islamic world came under Mongol domination, while the civil offices in the newly acquired realm were apt to be placed in Uigur hands. Tabriz, the new Mongol capital of Persia, gradually took the place that Bagdad had held as the commercial and cultural centre of Western Asia. Under the strong rulers who held sway in Western Asia, deriving their authority from the Grand Khan, all parts of Asia came into a close contact that had never been known before. A Chinese general was the first governor of Bagdad after its conquest, and Chinese engineers were employed for irrigation in the Tigris valley, while a Turk from North China was made the Christian patriarch of Bagdad.

Moreover, this conglomerate, cosmopolitan empire, which held sway from the Pacific to Damascus, was face to face with Europe through the Crusades and the trade of Italian cities that followed in the wake of the Crusades. Tabriz had not only its Uigur quarter and its Chinese quarter, it had also its Venetian and Genoese colonies, the latter large enough to be governed as a separate unit by a council of twenty-four elders.

Embassies were sent from the Court of Tabriz, both to China and to Europe. The Great Seal, without which no document issued by the ruler of Persia could be legally binding, was sent from Peking and its impress was in Chinese characters, as is witnessed by a number of impressions from this seal on letters still in the archives of Rome and Paris, letters brought by the Khan's ambassadors seeking alliance against their common enemies, the Moslems. These Chinese seal impressions, some of them more than five inches square, were the nearest approach to block printing that Europe had yet seen.

The one record of Chinese block printing in the Islamic world before the days of Gutenberg, is at Tabriz, the Mongol capital of Persia, in the year 1294. In that year—the very year, by the way, in which Marco Polo passed through Tabriz on his homeward journey and delivered safely the princess from Peking who had been committed to his charge—in that year the Mongol government of Persia made a large issue of paper money, printed in Arabic, but with also a few Chinese characters. The issue was unsuccessful; it resulted in riots and in the death of the Grand Vizier who had been its sponsor, for the paper money was unsupported by any reserve that should guarantee its value. But it was successful in bringing vividly before a great cosmopolitan community a method by which any desired text could be cheaply and rapidly duplicated, and it is interesting as indicating that there must

have been Chinese printers at Tabriz ready to execute the order for this issue of paper money.

Just after the failure of the paper money of 1294, Gazan Khan, the most cultured and probably the ablest of the Mongol rulers of Persia, came to the throne. It is said that the new ruler was able to use eight languages, including Chinese, Uigur, Arabic, and, according to one authority, Latin. Though Gazan Khan was the first of the Mongol rulers of Persia to embrace Islam and thus secure the loyalty of his subjects, and in spite of the fact that he threw off all allegiance to Peking, Gazan was able to maintain close relations both with the Peking Court and with various rulers of Europe. Letters that have been preserved from Edward II of England and from James of Aragon still regard him as a most Christian king ready to join them in hostility to the hated Saracens.

Gazan was distinctly all things to all men. So was his Prime Minister, Rashid-eddin, who came to power in the year 1300. This Prime Minister was entrusted with the task of writing a history of the Mongols, which soon developed into a history of Islam as well, and even a history of the world, by far the most comprehensive world history that had yet been seen, and almost the only history down to our own day that has included Chinese, Moslem, and European sources all within the compass of one work. The work starts naturally with Creation and gives a marvellous time-table of hours by which the Creator was able to finish his task on Thursday night in order to rest on the proper rest day on Friday. It also notes enough of European history to tell of the recent victories of England over the Scotch and to mention the fact that Ireland had no snakes. But the chief interest of this great compendium of history for our purposes is the full and clear description that it gives of Chinese printing, the earliest description that has yet been found outside of Chinese sources, and a century and a half before the time of Gutenberg.

In spite, however, of the fact that paper money had been printed at Tabriz and that printing had been accurately described in Rashid's history, the new art apparently made little headway among literary circles in the Arabic speaking world. Aside from Rashid, no Moslem writer mentions it except in scattered notices of the printing of paper money, nor is there any indication that Arabic literary works were printed. In fact, there is strong negative evidence in Rashid's own life, for in his will he left a large amount of money to have two copies of his history transcribed each year, one in Persian and one in Arabic, until every large city in the Islamic world should have a copy deposited in its mosque. The idea of having such literature as this printed seems never to have occurred to him. It seems likely that if printing passed to Europe by way of Persia, it was the printing of charms, paper money, crude pictures and playing cards, rather than that of literary productions, that passed that way.

BLOCK PRINTING IN EGYPT

It has generally been thought that the Islamic world was a barrier between the Far East that knew the art of printing and Europe which had not yet discovered the art. This is in the main true. While the Arabs of Samarkand seized with avidity

the Chinese art of paper making, and while Arabic writers extolled the virtues of the new writing material, these writers never once mentioned the art of printing. Even down to the 19th century the Koran had not been printed in Moslem countries and down to our own day the prejudice against printing has continued. Some have suggested that the use of pigs' bristles in the block printer's brush and the danger that the name of Allah should be profanely touched by this brush was at the back of the Moslem antipathy in its beginnings. However that may be, apart from the record of the paper money of Tabriz, no mention has yet been found in any Arabic writer of printing in Moslem countries in pre-Gutenberg days.

Till recently this omission was thought to be sufficient evidence that the Arabs never printed. Against this view, however, stand some dozens of block prints found forty odd years ago near the ruins of the ancient city of Arsinoë in the region of El-Faijum in Egypt. Strange to say, while these block prints are carefully described in the catalogue of the Erzherzog Rainer Collection in Vienna, written by the eminent Arabist, Karabacek, they have apparently been unnoticed by most of those who have written on the history of printing. An examination of these block prints at Vienna, and of others which have found their way to Berlin and Heidelberg, reveals some interesting and significant facts. In the first place there can be no doubt that these Egyptian block prints show distinct Chinese influence. They are made like the Chinese block prints, not by pressure but by the use of the brush; the ink too is the same as that of China and Turkestan. Furthermore, like the earliest prints of China, they consist altogether of charms and of excerpts from religious literature.

On the other hand, the religious literature is here not Buddhist sutras, but the Koran. The language and script of all the fragments is Arabic except for a few words in Coptic character. The art had evidently made itself at home in its new surroundings.

These fragments of Egyptian block printing, though few in number, present endless variety; some are large, some are small; some are coarse and rough, some are of the finest, most perfect workmanship; some are crude charms; some are sections of the Koran. But more important than all other differences, from the historian's point of view, is the variety of Arabic script which they contain. Some are in a script no longer in use after the 9th century, others in a script that did not begin until the 14th, and there is a great variety of intermediate forms. From archæological data it can be established that all of the finds are earlier than 1350. Further than this there is no evidence for dating other than script, and even here the possibility that early written models may have been used by printers of a later date must not be lost sight of.

These Egyptian block prints present a complete puzzle to the archæologist. Whence and how did block printing come? For the coming of paper into the Arabic world we have clear documentary evidence—it crossed the mountains from the Chinese cultural domain to the Moslem city of Samarkand in the wake of a military campaign in the year 751. For printing we have no such record—nothing but the

prints themselves to tell the tale. Did they too come across the mountains and the deserts from Central Asia during the wave of Turkish migration to Mesopotamia and Egypt that began in the 9th century and continued for several hundred years? or did the Chinese influence come by the sea route in the wake of Chinese trade, which already in the T'ang dynasty had become important? or is it possible that the block prints found must all be given a later date and that the new art came into the Moslem world in the train of the Mongol conquest? To these questions it is impossible as yet to give an answer. All that can be said is that at the end of the period of the Crusades, and probably through the whole of the period of the Crusades, printing was going on in Egypt. It was an obscure art of the common people, not heralded in literature any more than was the early block printing of Europe. In fact, block printing in China had had equally obscure beginnings. In China, in Egypt, and in Europe printing began as a poor man's art, an art that enabled him to satisfy his religious cravings without the expense of manuscripts and paintings. Whether this obscure printing extended over a larger area of the Moslem world, and has been preserved only in Egypt on account of the desert climate, it is impossible to say. All we know is that these block prints exist, and that somehow, in a way which the future will perhaps more clearly reveal, they seem to form a link between the printing of China and that of Europe.

It is not the purpose of this article to prove that the route by which printing entered Europe was through Turkestan, Persia, and Egypt, or through any one of these countries. No accurate and certain tracing of the route can yet be attempted. The probability seems to be that the knowledge of printing passed into Europe by many different channels, and that we shall never be able to trace with entire accuracy these hidden ways. The earliest mention of Chinese printing by a European writer —the Italian historian, Jovius, just a century after Gutenberg—states that the new art came by way of Russia, or, as a quaint old English manuscript now in St. Bride's Library translates it, "The art of printing was brought to Europe by the Muscovites and Scythians from the Indians of Cathay." Others who may have had something to do with the advent of printing to Europe were the missionaries sent from Rome and Avignon, who came to China immediately after Marco Polo's return, and who record the fact that they translated the New Testament and Psalter and prepared many pictures for the unlearned. Realizing, as we now do, that in these pre-Renaissance days it was Europe that was unlearned rather than China, it would be interesting to know whether these first missionaries had their translations and their pictures printed, as other literature in China was being printed, and whether they may have had something to do with carrying the art to Europe. It would also be interesting to know how much playing cards—moving westward from China at the same time—may have had to do with the progress of printing. All that can be done to-day is to indicate these many points of connexion, which during the time of the Mongols bound China and Europe together, without seeking to decide over which or how many of the various ways the art of printing actually travelled.

WESTWARD MOVEMENT OF THE ART OF PRINTING

The Gutenberg-Coster controversy is but a part of a far larger international problem, for every leading nation of Asia and the European continent has had a part in the invention of printing. China first discovered paper and the art of block printing, and first experimented with movable type. The earliest block prints extant are in the Sanskrit language and made in Japan. Korea first used metal type. The Arabs carried paper manufacture from China to Europe. People of the Turkish race had the largest share in carrying block printing westward, and the earliest extant type is in a Turkish tongue. Persia and Egypt are the two lands of the Near East where block printing is known to have been carried on before it reached Europe. Spain was the first country in Europe to manufacture paper, France the first in Christendom, and Italy the first to manufacture it on a large scale. As to the transmission of block printing into Europe, Russia's claim rests on the oldest documentary evidence, though Italy's claim is fully as strong. Germany, Italy, and Bohemia were the earliest centres of European block printing activity, Holland and France claim first to have experimented with movable type. Germany under Gutenberg perfected European typography, and from Germany it spread through Europe. Great Britain and the United States, the nations which do the bulk of the world's printing to-day, are the two great nations which had no part in the history of printing before the days of Gutenberg.

NOTES ON THE PLATES ILLUSTRATING THE ARTICLE

PLATE 14. The World's Oldest Book.

Found by Sir Aurel Stein in the Cave of the Thousand Buddhas at Tun Huang, and now in the British Museum. The roll is sixteen feet long by one foot wide, made of six sheets of paper pasted together. This illustration represents the end of the roll, with the dated inscription. It reads, " Made by Wang Chieh for free distribution in order to do honour to his parents, on the fifteenth day of the fourth month of the period Chien T'ung (A.D. 868)."

PLATE 15, Fig. A. Metal Stamp for making Seated Buddhas, with Nimbus.

These stamped Buddhas preceded block printing, both in China and in Central Asia.

(Found at Chotscho. Height 6 cm.)

PLATE 15, Fig. B. Fragment of Roll of Stamped Buddhas.

Large numbers of such rolls, impressed on thin paper, have been found in various places in Central Asia, and illustrate the way in which the Buddhist passion for reduplication prepared the way for printing. One such roll in the British Museum contains 468 impressions, all from the same stamp.

(Found at Sangim ayiz, near Turfan. Size 15.5 × 22 cm.)

PLATE 16, Fig. A. Buddhist Woodcut, with short Text in Uigur.

(Found at Murtuk. 22 × 32 cm.)

PLATE 16, Fig. B. Buddhist Woodcut, with Chinese Text.
From near Turfan.

PLATE 17, Fig. A. Two Leaves from a Folded Book in the Uigur Language.

The heading is in both Uigur and Chinese. The two circles indicate that the original manuscript from which this was copied was in the Indian form known as *pothi*, i.e. with the pages laid together and bound through with a thong. The printers copied the original so faithfully that they even represented in print the hole for the thong, though in this folded form no thong was used.
(Found at Chotscho. 56×24 cm.)

PLATE 17, Fig. B. Chinese Block Book, with Buddhist Text.

Two leaves from a sutra in verse, in " folded book " form. The originals of this and the six preceding illustrations were found by the expeditions of Grünwedel and Le Coq in the region of Turfan. Their dating is uncertain, but must in all cases be earlier than 1350 A.D.
(Found at Kurukta, north of Turfan. Size 25.3×18.5 cm.)

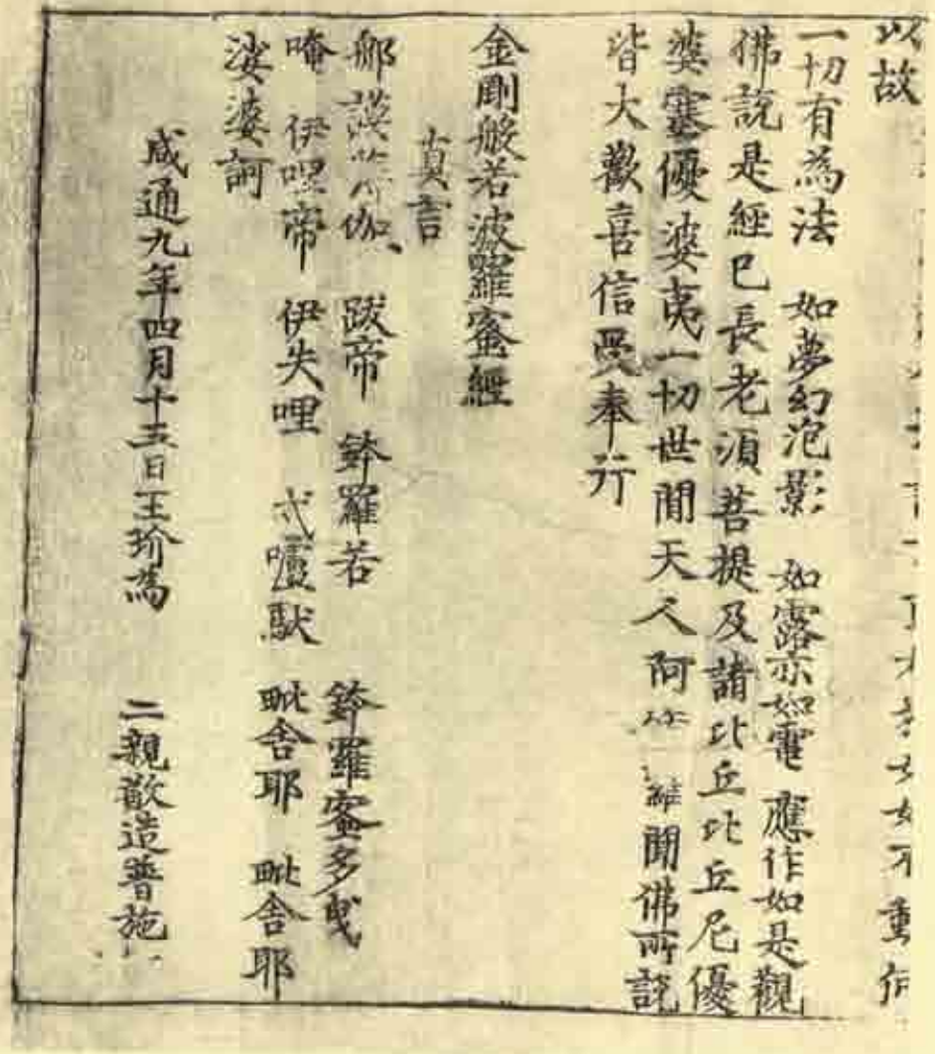
PLATE 18, Fig. A. A 14th Century Bank Note.

Dating from the reign of Hung Wu (1368–1399) and probably from the year 1375. Printed in black on heavy paper of dark slate colour, with seal impressions in red. Value one thousand cash.
(Found in the Imperial Palace at Peking. Size 32×21 cm.)

PLATE 18, Fig. B. An Arabic Block Print from Egypt.

Date uncertain. Before 1350. Probably much earlier.
(Found near el-Uschmûnein.)

PLATE 19. Page from a German Block Book of the 15th Century.



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皆大歡喜信受奉行

金剛般若波羅蜜經

真言

揭諦揭諦　波羅揭諦　波羅僧揭諦　菩提薩婆訶

咸通九年四月十五日王玠為　二親敬造普施

奏　啓不審近日

尊體何似伏惟倍加

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A

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A

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般若波羅蜜多清淨即五眼清淨

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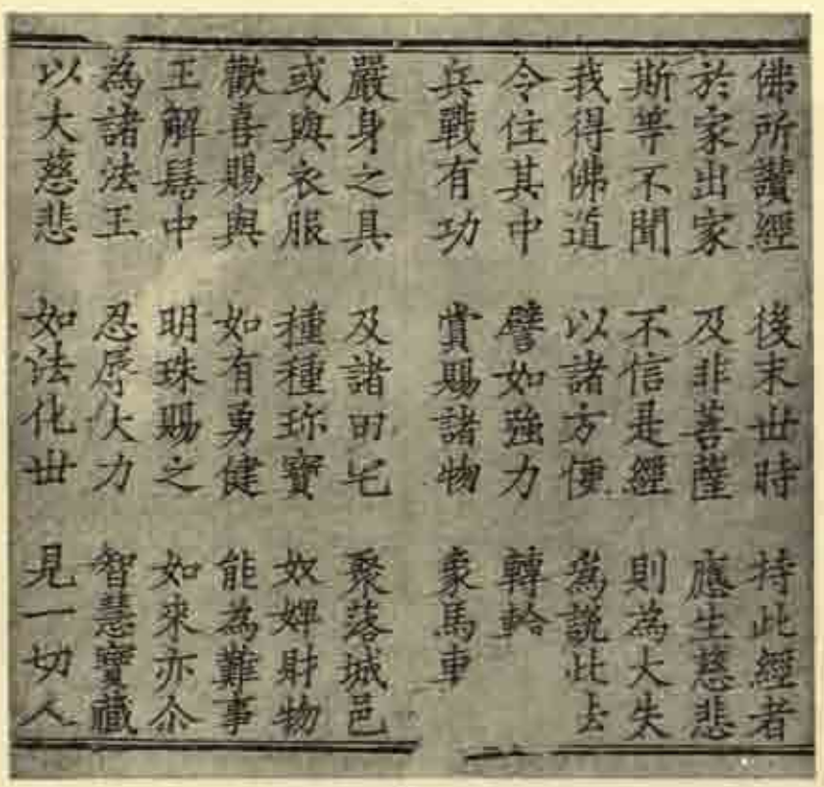

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兵戰有功　賞賜諸物　象馬車
嚴身之具　及諸田宅　衆落城邑
或與衣服　種種珍寶　奴婢財物
歡喜賜與　如有勇健　能為難事
王解髻中　明珠賜之　如來亦尒
為諸法王　忍辱大力　智慧寶藏
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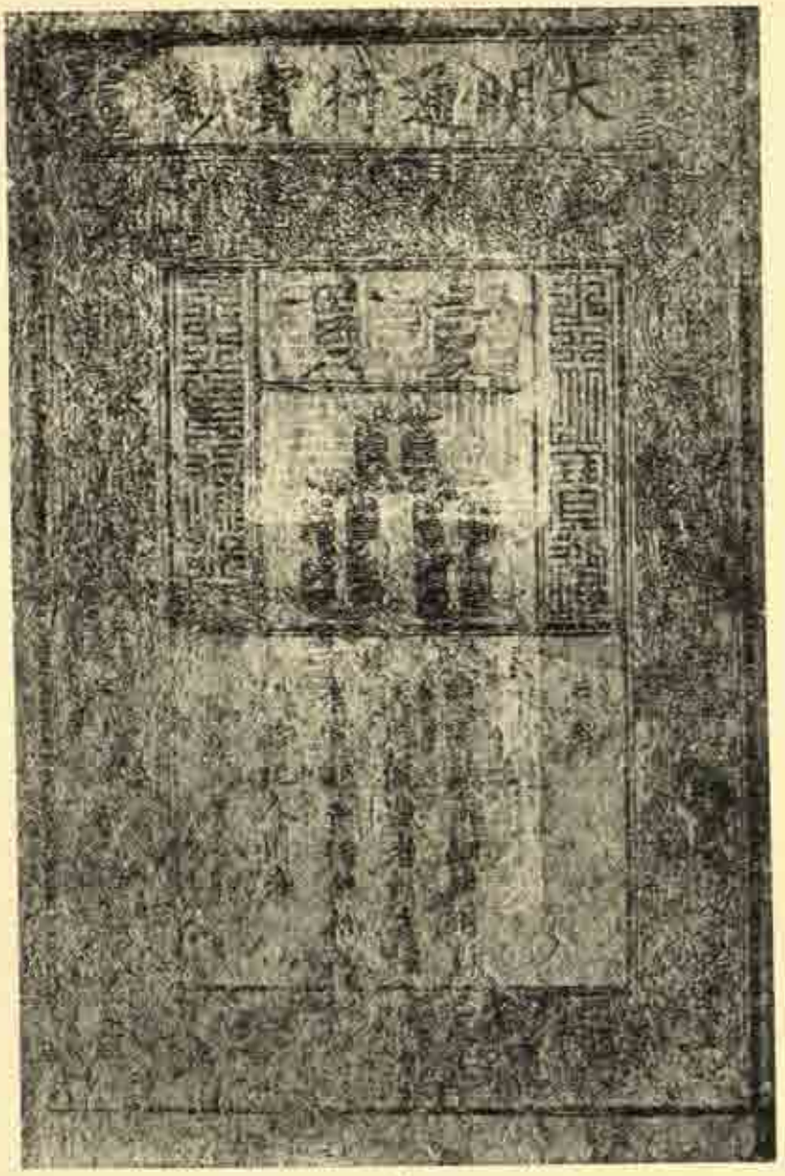

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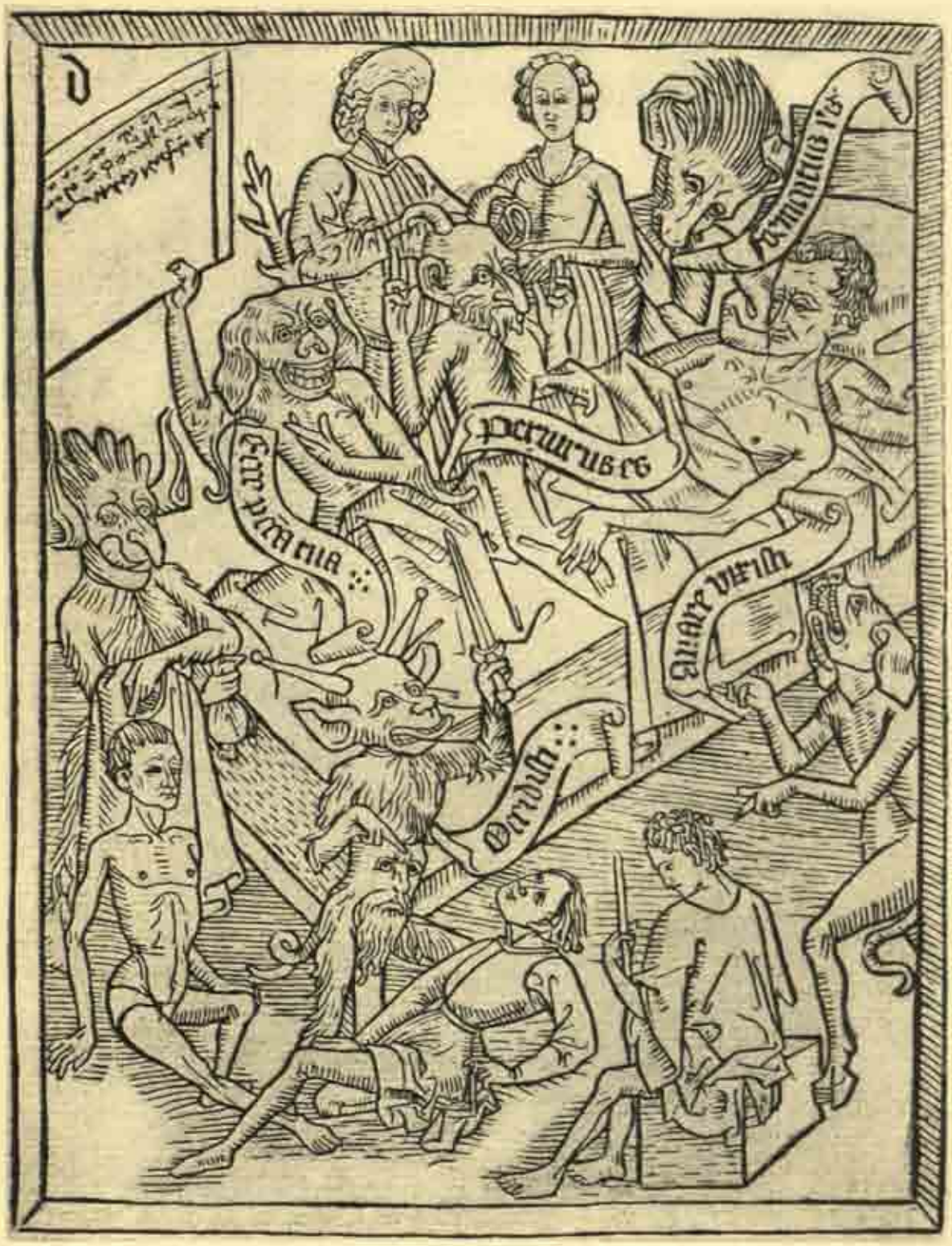
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